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Award Number: DAMD17-02-1-0654

TITLE: "Health-Related Quality of Life for Pediatric NF1 Patients"

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REPORT DATE: August 2006

TYPE OF REPORT: Annual

PREPARED FOR: U.S. Army Medical Research and Materiel Command

Fort Detrick, Maryland 21702-5012

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1. INTRODUCTION

The objective of this project is to develop an NF1-specific health-related quality of life (HRQL) instrument for pediatric patients and their parents. Semi-structured interviews with children with NF1, their parents, and teachers yielded relevant domains and content that were used to develop the first-generation instrument. This first-generation instrument was field tested for psychometric properties and understandability and then revised. The revised instrument will be completed by a group of children and their parents to test its validity and sensitivity to change in clinical status. It is our hypothesis that the addition of this disease-specific measure will significantly improve the descriptiveness and quantification of the impact of NF1 and its treatment on children's lives.

2. BODY

The original Statement of Work identified the following tasks:

Task 1: Identify domains and items to reflect important aspects of HRQL (COMPLETED)

- Complete review of literature to gather previously identified HRQL topics
 - Develop standardized interviews for patients, parents, teachers, and health care professionals
 - Pilot interviews and modify as needed
 - Conduct interviews of patients, parents, teachers and health care professionals
 - Transcribe interviews, review for functioning areas impacted by NF1

Task 2: Administer preliminary items to sample of NF1 patients and parents and use item analysis methods to construct preliminary HRQL instrument. (COMPLETED)

- Recruit NF1 participants and parents
- Mail out questionnaires for completion and return
- Enter and analyze data
- Produce final NF1-specific instrument for studies in subsequent tasks

Task 3: Conduct reliability, validity and responsivity studies for NF1 instrument (IN PROGRESS

Additionally, although not stated in the original Statement of Work, we were required to gain approval from both the Army/Department of Defense Human Subjects Review Board and our local Institutional Review Board prior to recruiting participants. Because of the manner in which the projects were proposed, and the reliance on material/questionnaires developed at each stage, it was necessary to submit separate Human Subjects protocols for each of the 3 projects (interviews, first-generation validation, and final version validation).

Status of Work. As noted in prior reports, Task 1 has been completed. At the time of the last Annual Report, we had largely completed all of the tasks in #2. The resulting work product from Task 2 was an NF1-specfic HRQL instrument, which demonstrates acceptable psychometric properties, including internal validity. Since August 2005, we have completed revisions to produce the final NF-1 specific instrument (primarily formatting and readability changes) which we are using in Task 3. Additionally, data files were verified for accuracy and completeness and the preliminary findings were confirmed and finalized.

In regard to Task 3, which is currently in progress, we have received initial approval for the project from the West Virginia University Institutional Review Board for the Protection of Human Subjects. That

information was subsequently reviewed by the Department of Defense Human Subjects Review Board and returned to us with suggested revisions. Those revisions were taken through the review process at WVU again, and we are now awaiting final approval of the documents and protocol from the Department of Defense.

3. KEY RESEARCH ACCOMPLISHMENTS

1. The primary accomplishment from the research thus far has been the development of HRQL instrument for youth with NF1 and their parents.

4. REPORTALE OUTCOMES AND CONCLUSIONS

We have demonstrated the feasibility of working with professionals and children with NF1 and their parents to develop an instrument assessing the health-related quality of life of these children. The resulting measure has demonstrated acceptable psychometric properties in terms of its descriptiveness and internal validity. Importantly from a practical standpoint, respondents did not perceive the instrument as either burdensome or distressing, and reported that it accurately reflected HRQL.

5. REFERENCES

None

6. APPENDICES

The most current versions of the NF1 instruments for parents and for children are included in the Appendix.

General	Health					
1. In gen	neral, I would sa	ay that my h	ealth is:			
	1 Poor	2	3	4	5 Excellent	
2. Comp	ared to this tim	e last year, l	would say my	y health is:		
	1 Much Worse	2	3	4	5 Much Better	
3. I get s	ick more easily	that other k	ids:			
	1 Yes, Definite	2 ly	3	4	5 No, not at all	

Appetite and Sleep						
In the past week, have you:						
	Always		Sometimes		Never	
4. Had difficulty falling asleep or staying asleep?	1	2	3	4	5	
5. Had bad dreams or nightmares?	1	2	3	4	5	
6. Been less hungry than usual?	1	2	3	4	5	
7. Been more hungry than usual?	1	2	3	4	5	

Pain					
In the past week, have you:					
	Always		Sometimes		Never
8. Hurt a lot?	1	2	3	4	5
9. Has muscle pains or aches?	1	2	3	4	5
10. Had headaches?	1	2	3	4	5
11. Had stomachaches?	1	2	3	4	5
12. Had pain in your bones or joints?	1	2	3	4	5
13. Had neurofibromas or other areas on your body that hurt to touch?	1	2	3	4	5
	Much More		About the Same		Much Less
14. Compared to other people my age, the amount of pain I have is	1	2	3	4	5
	Very True		Somewhat		Not at all
15. Pain keeps me from doing the things that I want to do or need to do	1	2	3	4	5

Understanding					
In the past week,	were you:				
16. Bothered that	you didn't know er	ough about	NF-1?		
	1	2	3	4	5
	A lot		Some		Not at all
17. Frustrated abo	out having NF-1?				
	1	2	3	4	5
	A lot		Some		Not at all

In the past week, have you:

Sensation

	Always		Sometimes		Never
18. Had difficulty hearing others when they talk? Check here if you wear a hearing aid	1	2	3	4	5
19. Had trouble seeing well? Check here if you wear glasses or contacts	1	2	3	4	5
20. Had trouble feeling the things you touch?	1	2	3	4	5

Symptoms - 1

In the past week, have you:

in the past week, nave you:	Always		Sometimes		Never
21. Felt sick to your stomach?	1	2	3	4	5
22. Had a headache?	1	2	3	4	5
23. Had a stomachache?	1	2	3	4	5
24. Had a hard time breathing?	1	2	3	4	5
25. Felt dizzy or like you might faint?	1	2	3	4	5
26. Felt weak?	1	2	3	4	5
27. Felt tired or fatigued?	1	2	3	4	5
28. Had a hard time swallowing?	1	2	3	4	5
29. Had a hard time keeping your balance?	1	2	3	4	5
30. Had a difficulty tying shoes, using scissors, holding a pencil?	1	2	3	4	5
31. Been clumsy?	1	2	3	4	5
32. Had a hard time riding a bike, running, or catching a ball?	1	2	3	4	5

Psychological and Behavioral - 1

In the past week, have you:

in the past week, have you:	Always		Sometimes		Never
33. Felt cranky or irritable?	1	2	3	4	5
34. Worried?	1	2	3	4	5
35. Felt anxious?	1	2	3	4	5
36. Gotten easily frustrated?	1	2	3	4	5
37. Gotten in trouble because of your behavior at school?	1	2	3	4	5
38. Gotten in trouble because of your behavior at home?	1	2	3	4	5
39. Felt afraid or scared?	1	2	3	4	5
40. Felt sad, down, or depressed?	1	2	3	4	5
41. Felt angry?	1	2	3	4	5
42. Worried about what might happen to you?	1	2	3	4	5
43. Felt like crying?	1	2	3	4	5
44. Felt lonely?	1	2	3	4	5
45. Felt cheerful?	1	2	3	4	5

Psychological and Behavioral - 2					
In the past week, have you:					
 	Always		Sometimes		Never
46. Felt confident about yourself?	1	2	3	4	5
47. Enjoyed the things you do?	1	2	3	4	5
48. Had fun?	1	2	3	4	5
49. Felt jittery or restless?	1	2	3	4	5
50. Argued?	1	2	3	4	5
51. Wanted to be alone?	1	2	3	4	5
52. Had mood swings?	1	2	3	4	5
53. Not done what your parent or teacher asked?	1	2	3	4	5
54. Had anxiety or panic attacks?	1	2	3	4	5
55. Hit or kicked someone?	1	2	3	4	5
56. Heard voices that weren't there?	1	2	3	4	5
57. Compared to other children your age, would	l you say your beh	avior is:			
1 2	3	4	5		

Much Better

Who helped you fill out this page? (Circle One) Mother Father No One Other_______
If you received help, please circle the question numbers on this page for which you needed help.

Ok

Much Worse

School and Cognition -1

In the past week, have you:

In the past week, have you:						
	Always		Sometimes		Never	
58. Missed school because of your health? Check here if school was on vacation	1	2	3	4	5	
59. Been bothered because you missed school? Check here if you haven't missed any school	1	2	3	4	5	
60. Missed school to go to the doctor or hospital?	1	2	3	4	5	
61. Had difficulty solving math problems?	1	2	3	4	5	
62. Had trouble writing papers or reports?	1	2	3	4	5	
63. Had trouble following or understanding directions?	1	2	3	4	5	
64. Had difficulty remembering what you read?	1	2	3	4	5	
65. Had trouble reading?	1	2	3	4	5	
66. Forgotten things?	1	2	3	4	5	
67. Had trouble keeping up with your schoolwork?	1	2	3	4	5	

School and Cognition -2

In the past week, have you:

In the past week, have you.	Always		Sometimes		Never	
68. Had trouble turning your schoolwork in on time?	1	2	3	4	5	
69. Had difficulty paying attention and concentrating in class?	1	2	3	4	5	
70. Had trouble writing neatly?	1	2	3	4	5	
71. Had a hard time sitting still in class?	1	2	3	4	5	
72. Had trouble organizing your work or things?	1	2	3	4	5	
73. Had trouble spelling?	1	2	3	4	5	

In the past week;					
74. How would you r	ate your ability	to do your s	choolwork?		
	1	2	3	4	5
	Poor		Ok		Excellent

Social Relations

In the past week, have you:

	Always		Sometimes		Never	
75. Had trouble getting along with other kids?	1	2	3	4	5	
76. Helped others?	1	2	3	4	5	
77. Preferred to be alone?	1	2	3	4	5	
78. Preferred quiet activities?	1	2	3	4	5	
79. Avoided doing things with other kids?	1	2	3	4	5	
80. Felt bothered because you couldn't do the activities you like?	1	2	3	4	5	
81. Felt like other kids didn't want to do things with you?	1	2	3	4	5	
82. Felt like other kids didn't want to be your friend?	1	2	3	4	5	

	Poor		Ok		Excellent
83. How would you rate your family's ability to get along with each other?	1	2	3	4	5
84. How would you rate your ability to get					
along with other kids?	1	2	3	4	5

Appearance

In the past week, have you:

In the past week, have you.				· · · · · · · · · · · · · · · · · · ·	1	
	Always		Sometimes		Never	
85. Been teased about how you look?	1	2	3	4	5	
86. Felt bad about how you look?	1	2	3	4	5	
87. Worried about how you look?	1	2	3	4	5	
88. Been teased about your height/weight?	1	2	3	4	5	
89. Avoided doing things with others because						
of how you look?	1	2	3	4	5	
90. Done things to hide part of your body because of how it looks?	1	2	3	4	5	
because of now it looks?	1	<u> </u>	3	4	3	
91. Noticed people staring at you?	1	2	3	4	5	
92. Heard strangers make rude comments about			_			
you?	1	2	3	4	5	
93. Worried about other people teasing you?	1	2	3	4	5	

94. I am satisfied with the way I look	1	2	3	4	5
	Not at all		Somewhat		Very much

Speech and Language					
In the past week, have:					
	Always		Sometimes		Never
95. Other people had a hard time understanding you when you talk?	1	2	3	4	5
96. You had a hard time understanding what other people say to you?	1	2	3	4	5

Global Ratings					
97. How well did the questions in this survey describe your	Poor		Somewhat		Excellent
quality of life?	1	2	3	4	5
	Poor		Ok		Excellent
98. How would you rate your overall quality of life?	1	2	3	4	5
	Very		Somewhat		Not at all
99. How difficult was it to complete this survey?	1	2	3	4	5
100. How upsetting was it to complete this survey?	1	2	3	4	5

Thank you!

Please Put Your Completed Survey in the Stamped, Addressed Envelope and Drop in the Mail!

General Health

1. In general, I would say that my child's					
health is:	1	2	3	4	5
	Poor				Excellent
2. Compared to this time last year, I would					
say my child's health is:	1	2	3	4	5
	Much Worse				Much Better
2 My shild gots girls more easily than other					
3. My child gets sick more easily than other			_		_
kids:	1	2	3	4	5
	Yes, Definitely				No, not at all

Appetite and Sleep

	Always		Sometimes		Never
4. Had difficulty falling asleep or staying					
asleep?	1	2	3	4	5
5. Had bad dreams or nightmares?	1	2	3	4	5
6. Been less hungry than usual?	1	2	3	4	5
7. Been more hungry than usual?	1	2	3	4	5

Pain

In the past week, has your child:

	Always		Sometimes		Never
8. Hurt a lot?	1	2	3	4	5
9. Has muscle pains or aches?	1	2	3	4	5
10. Had headaches?	1	2	3	4	5
11. Had stomachaches?	1	2	3	4	5
12. Had pain in his/her bones or joints?	1	2	3	4	5
13. Had neurofibromas or other areas on					
his/her body that hurt to touch?	1	2	3	4	5

	Much More	,	About the Samo	Much Less	
14. Compared to other people my child's age,					
the amount of pain my child has is	1	2	3	4	5
	Very True		Somewhat		Not at all
15. Pain keeps my child from doing the things					
that s/he wants to do or needs to do	1	2	3	4	5

Understanding

	A lot		Some		Not at all
16. Bothered that s/he didn't know enough					
about NF-1?	1	2	3	4	5
17. Frustrated about having NF-1?	1	2	3	4	5

Sensation

In the past week, has your child:

	Always		Sometimes		Never
18.Had difficulty hearing others when they talk?	1	2	3	4	5
Check here if s/he wears a hearing aid					
19. Had trouble seeing well?	1	2	3	4	5
Check here if s/he wears glasses or contacts					
20. Had trouble feeling the things s/he touches?	1	2	3	4	5

Symptoms - 1

	Always		Sometimes		Never
21. Felt sick to his/her stomach?	1	2	3	4	5
22. Had a headache?	1	2	3	4	5
23. Had a stomachache?	1	2	3	4	5
24. Had a hard time breathing?	1	2	3	4	5
25. Felt dizzy or like s/he might faint?	1	2	3	4	5
26. Felt weak?	1	2	3	4	5
27. Felt tired or fatigued?	1	2	3	4	5
28. Had a hard time swallowing?	1	2	3	4	5
29. Had a hard time keeping his/her balance?	1	2	3	4	5

Symptoms - 2

In the past week, has your child:

	Always	Sometimes			Never
30. Had a difficulty tying shoes, using scissors,	1	2	2	4	5
holding a pencil?	1		3	4	3
31. Been clumsy?	1	2	3	4	5
32. Had a hard time riding a bike, running, or					
catching a ball?	1	2	3	4	5

Psychological and Behavioral - 1

-	Always		Sometimes		Never	
33. Felt cranky or irritable?	1	2	3	4	5	
34. Worried?	1	2	3	4	5	
35. Felt anxious?	1	2	3	4	5	
36. Gotten easily frustrated?	1	2	3	4	5	
37. Gotten in trouble because of his/her behavior at school?	1	2	3	4	5	
38. Gotten in trouble because of his/her behavior at home?	1	2	3	4	5	
39. Felt afraid or scared?	1	2	3	4	5	
40. Felt sad, down, or depressed?	1	2	3	4	5	
41. Felt angry?	1	2	3	4	5	
42. Worried about what might happen to him/her?	1	2	3	4	5	

Psychological and Behavioral - 2

	Always		Sometimes		Never
43. Felt like crying?	1	2	3	4	5
44. Felt lonely?	1	2	3	4	5
45. Felt cheerful?	1	2	3	4	5
46. Felt confident about him/herself?	1	2	3	4	5
47. Enjoyed the things s/he does?	1	2	3	4	5
48. Had fun?	1	2	3	4	5
49. Felt jittery or restless?	1	2	3	4	5
50. Argued?	1	2	3	4	5
51. Wanted to be alone?	1	2	3	4	5
52. Had mood swings?	1	2	3	4	5
53. Not done what his/her parent or teacher					
asked?	1	2	3	4	5
54. Had anxiety or panic attacks?	1	2	3	4	5
55. Hit or kicked someone?	1	2	3	4	5
56. Heard voices that weren't there?	1	2	3	4	5

	Much Worse		Ok		Much Better
57. Compared to other children your child's					
age, would you say your child's behavior is:	1	2	3	4	5

School and Cognition -1

	Always		Sometimes		Never
58. Missed school because of his/her health?	1	2	3	4	5
Check here if school was on vacation					
59. Been bothered because s/he missed school?	1	2	3	4	5
Check here if your child hasn't missed any school					
60. Missed school to go to the doctor or hospital?	1	2	3	4	5
61. Had difficulty solving math problems?	1	2	3	4	5
62. Had trouble writing papers or reports? 63. Had trouble following or understanding	1	2	3	4	5
directions?	1	2	3	4	5
64. Had difficulty remembering what s/he read?	1	2	3	4	5
65. Had trouble reading?	1	2	3	4	5
66. Forgotten things?	1	2	3	4	5
67. Had trouble keeping up with schoolwork?	1	2	3	4	5
68. Had trouble turning schoolwork in on time?	1	2	3	4	5

School and Cognition -2

In the past week, has your child:

	Always		Sometimes		Never
69. Had difficulty paying attention and concentrating in class?	1	2	3	4	5
70. Had trouble writing neatly?	1	2	3	4	5
71. Had a hard time sitting still in class?	1	2	3	4	5
72. Had troulbe organizing work or things?	1	2	3	4	5
73. Had trouble spelling?	1	2	3	4	5

In the past week;

	Poor		Ok		Excellent
74. How would you rate your child's ability to					
do schoolwork?	1	2	3	4	5

Social Relations - 1

	Always		Sometimes			
75. Had trouble getting along with other kids?	1	2	3	4	5	
76. Helped others?	1	2	3	4	5	
77. Preferred to be alone?	1	2	3	4	5	
78. Preferred quiet activities?	1	2	3	4	5	
79. Avoided doing things with other kids?	1	2	3	4	5	

Social Relations - 2

In the past week, has your child:

	Always		Sometimes	Never	
80. Felt bothered because s/he couldn't do the activities they like?	1	2	3	4	5
81. Felt like other kids didn't want to do things with them	1	2	3	4	5
82. Felt like other kids didn't want to be his/her friend?	1	2	3	4	5
	Poor		Ok		Excellent
83. How would you rate your family's ability to get along with each other?	1	2	3	4	5
84. How would you rate your child's ability to get along with other kids?	1	2	3	4	5

Appearance - 1

•	Always		Sometimes	Never	
85. Been teased about how they look?	1	2	3	4	5
86. Felt bad about his/her appearance?	1	2	3	4	5
87. Worried about their looks?	1	2	3	4	5
88. Been teased about size?	1	2	3	4	5
89. Avoided doing things with others because					
of how s/he looks?	1	2	3	4	5

Appearance - 2

In the past week, has your child:

	Always	Sometimes			Never
90. Done things to hide part of their body					
because of how it looks?	1	2	3	4	5
91. Noticed people staring at them?	1	2	3	4	5
92. Heard strangers make rude comments about them?	1	2	3	4	5
93. Worried about other people teasing them?	1	2	3	4	5
	Not at all		Somewhat		Very much
94. My child is satisfied with his/her looks	1	2	3	4	5

Speech and Language

In the past week, have:

	Always		Sometimes	Never	
95. Other people had a hard time understanding oury child when s/he talks?	1	2	3	4	5
96. My child had a hard time understanding what other people said to them?	1	2	3	4	5

Global Ratings

	Poor		OK		Excellent
97. How would you rate your child's overall					
quality of life?	1	2	3	4	5

	Very		Somewhat		Not at all	
98. How difficult was it to complete this						
survey?	1	2	3	4	5	
How upsetting was it to complete this survey?	1	2	3	4	5	

Poor		Somewhat		
1	2	3	4	5
	Poor 1	Poor 1 2	Poor Somewhat 1 2 3	Poor Somewhat 1 2 3 4

Please Put your Completed Survey in the Stamped, Addressed Envelope and Drop in the Mail! Thank you!